## Space Weather Forecast

Issued on Wednesday, 28 February 2024 at 01:14 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

**Space Weather Forecast Headline: Ongoing chance of Moderate or Strong flares from the large sunspot in the northwest.**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Low with only common class flares observed, the strongest from the sunspot in the northwest disc. This is the largest of six regions currently on the Earth-facing Sun, with a clear and large single spot that contains different magnetic polarities. There is some suggestion of some strengthening in the region where these two polarities meet. In the northeast a further, much smaller spot, consolidated into an east-west aligned bipolar configuration, while another spot, further east, showed little change. The other regions were smaller and simpler.

A coronal mass ejection (CME) was observed off the south centre disc. This was due to eruption of a filament, or line of plasma, from around 27/1100 UTC. Analysis is still underway for any Earth-directed component.

**Solar Wind / Geomagnetic Activity:** Solar winds eased after the recent weak coronal hole influence. Speeds eased from slightly elevated to be background, from peak 450 km/s to just below 400 km/s. Interplanetary magnetic field was moderate at first but gradually eased to be weak from 27/0600 UTC. The north-south component was initially moderately negative (southward directed), but eased to be more variable and weak from 27/0600 UTC. Geomagnetic activity was Unsettled to Active (Kp3-4) 27/0000-27/0900 UTC with a G1 Minor Storm (Kp5) interval 27/0300-0600 UTC. Activity eased to Quiet to Unsettled (Kp0-3) from 27/0900 UTC.

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) remained at background with no radiation storms observed.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** Low to Moderate activity expected with isolated M-class flares. There remains a slight chance of X-class flares from the large sunspot in the northwest.

**Solar Wind / Geomagnetic Activity:** The coronal mass ejection from the filament eruption on 27 Feb is still under analysis, but appears likely to miss to the south with at most only a glancing impact on day 4 (02 Mar). Otherwise, no significant enhancements are expected with mainly background winds expected. Geomagnetic activity is likely to remain Quiet with only a chance of isolated Unsettled intervals.

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) is expected to persist at background, but with a chance of rising in response to any notable flares from the large sunspot on the northwest disc. This brings a slight chance of solar radiation storms (S1 or greater).

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.

# Space Weather Forecast

**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | Yes | 1 | 1 | 1 | 5 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | No | 50 | 50 | 50 | 50 |
| Very Active | R3 to R5 X | No | 20 | 20 | 20 | 20 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 15 | 15 | 15 | 15 |
| Very Active | ≥ S3 * | No | 5 | 5 | 5 | 5 |

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.